

## REMARKS

Claims 1-17 are pending. Applicants respectfully submit that no new matter is submitted herein.

### Claims 1-17 Recite Patentable Subject Matter

#### A. Claim Rejections under 35 U.S.C. §102

Claims 1-9 and 17 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,508,935 to Pourboghrat. Applicants respectfully traverse the rejection.

##### I. Claims 1-3

Claims 1 and 3 recite, among other features, that local coordinate systems represent a stable die of a bending apparatus within the overall coordinate system.

Applicants respectfully submit Pourboghrat does not disclose or suggest such a feature.

The Office Action asserts Pourboghrat discloses a computer-implemented method of generating control data for a bending apparatus including steps of defining local coordinate systems within an overall coordinate system designed to specify a shape of an elongated product, wherein the local coordinate system represents a stable die of the bending apparatus within the overall coordinate system. The Office Action cites column 6 lines 44-56 of Pourboghrat in supporting the assertion.

Applicants have closely reviewed Pourboghrat and failed to locate any such disclosure or teaching.

Rather, Applicants respectfully note that Pourboghrat specifically teaches modeling the bending of the part by determining deformation of each discretized element

as it is being bent by the rotary bending die and not the stationary portion. See column 6, lines 46-50 of Pourboghrat. The deformation subroutine disclosed by Pourboghrat calculates the deformation of the element 370 of the extrusion as it is being bent by the rotary bending die. See column 6, lines 52-54 of Pourboghrat. This procedure is repeated for each discrete element 370-377.

Moreover, Applicants respectfully submit the Office Action contradicts itself by later asserting in discussing the rejection of Claim 4 that Pourboghrat discloses, in column 6, lines 44-56, that control data is generated specifying positions for a movable die of the bending apparatus.

As such, Applicants respectfully submit that the passage of Pourboghrat cited by the Office Action does not disclose the local coordinate systems represent the stable die or stationary portion of the bending machine.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Pourboghrat does not disclose or suggest each and every feature of Claims 1 and 3. Therefore, Applicants respectfully submit Pourboghrat does not anticipate or render obvious the invention recited by Claims 1 and 3. As such, Applicants respectfully submit Claims 1 and 3 should be deemed allowable.

Claim 2 depends from Claim 1. It is respectfully submitted this dependent claim be deemed allowable for at least the same reasons Claim 1 is allowable, as well as for the additional subject matter recited therein.

Applicants respectfully request withdrawal of the rejection as it applies to Claims 1-3.

## II. Claim 4

Claim 4 recites, among other features, capturing from a computer-aided design system a shape data specifying a shape of an elongated product.

Applicants respectfully submit Pourboghrat does not disclose or suggest such a feature.

The Office Action asserts Pourboghrat discloses capturing from a computer-aided design system a shape data specifying a shape of an elongated product. The Office Action cites column 4, line 23 of Pourboghrat as supporting the assertion.

Applicants have closely reviewed Pourboghrat and failed to locate any such disclosure or teaching.

Rather, Applicants respectfully note that Pourboghrat specifically teaches using an estimation process that should be well known to those skilled in the art of computer-aided design (“CAD”) to calculate the midpoint 320 of a discretized segment 318. See column 4, line 23 of Pourboghrat.

Applicants respectfully submit Pourboghrat does not disclose or suggest capturing from a computer-aided design system a shape data specifying a shape of an elongated product.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Pourboghrat does not disclose or suggest each and every feature of Claim 4. Therefore, Applicants respectfully submit Pourboghrat does not anticipate or render obvious the invention recited by Claim 4. As such, Applicants respectfully submit Claim 4 should be deemed allowable.

Applicants respectfully request withdrawal of the rejection as it applies to Claim 4.

### III. Claims 5-8

Claims 5-8 recite, among other features, determining a geometric position for a movable die of the bending apparatus based on a shape data specifying a shape of an elongated product.

Applicants respectfully submit Pourboghrat does not disclose or suggest such a feature.

The Office Action merely restates the claimed feature and asserts column 5, line 20 to column 11 of Pourboghrat supports the assertion that Pourboghrat discloses the feature.

Applicants have carefully reviewed the cited passages as well as the remainder of Pourboghrat and failed to uncover any disclosure or suggestion that the geometric position of the rotary bending die of the Pourboghrat bending apparatus is based on shape data specifying the shape of an elongated product.

Accordingly, Applicants respectfully request any subsequent Office Action specifically identify the location within Pourboghrat where such a feature is disclosed or suggested.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Pourboghrat does not appear to disclose or suggest each and every feature of Claims 5-8. Therefore, Applicants respectfully submit Pourboghrat does not anticipate or render

obvious the invention recited by Claims 5-8. As such, Applicants respectfully submit Claims 5-8 should be deemed allowable.

Applicants respectfully request withdrawal of the rejection as it applies to Claims 5-8.

#### IV. Claim 9

Claim 9 recites, among other features, determining a feed speed for an elongated workpiece which passes through a stable die of the bending apparatus based on a neutral axis.

Applicants respectfully submit Pourboghrat does not disclose or suggest such a feature.

The Office Action merely restates the claimed feature and asserts columns 4-5 of Pourboghrat supports the assertion that Pourboghrat discloses the feature.

Applicants have carefully reviewed the cited passages as well as the remainder of Pourboghrat and failed to uncover any disclosure or suggestion that the feed speed for the extrusion passing through the stationary portion of the bending machine is determined based on the neutral axis. In fact, Applicants respectfully submit a word search of Pourboghrat failed to uncover a single occurrence of the term “feed” or “speed,” either alone or together, within Pourboghrat.

Accordingly, Applicants respectfully request any subsequent Office Action specifically identify the location within Pourboghrat where such a feature is disclosed or suggested.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Pourboghrat

does not appear to disclose or suggest each and every feature of Claim 9. Therefore, Applicants respectfully submit Pourboghrat does not anticipate or render obvious the invention recited by Claim 9. As such, Applicants respectfully submit Claim 9 should be deemed allowable.

Applicants respectfully request withdrawal of the rejection as it applies to Claim 9.

#### V. Claim 17

Claim 17 recites, among other features, a processor unit designed to determine a position for the movable die based on respective local coordinate systems, the local coordinate systems defined on respective cross-sections of an image of the elongated product within the overall coordinate system.

Applicants respectfully submit Pourboghrat does not disclose or suggest such a feature.

The Office Action merely states the claim is rejected for the same reasons applied above in Claims 1-9.

Applicants have carefully reviewed the cited passages as well as the remainder of Pourboghrat and failed to uncover any disclosure or suggestion that a processor unit designed is provided to determine a position for the rotatable bending die based on respective local coordinate systems, the local coordinate systems defined on respective cross-sections of an image of the elongated product within the overall coordinate system.

Accordingly, Applicants respectfully request any subsequent Office Action specifically identify the location within Pourboghrat where such a feature is disclosed or suggested.

To qualify as prior art under 35 U.S.C. §102, a single reference must teach, i.e., identically describe, each feature of a rejected claim. As explained above, Pourboghrat does not appear to disclose or suggest each and every feature of Claim 17. Therefore, Applicants respectfully submit Pourboghrat does not anticipate or render obvious the invention recited by Claim 17. As such, Applicants respectfully submit Claim 17 should be deemed allowable.

Applicants respectfully request withdrawal of the rejection as it applies to Claim 17.

#### B. Claim Rejections Under 35 U.S.C. §103

Claims 10-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Pourboghrat in view of JP Publication No. 10314849 (hereinafter “JP ‘849”). Applicants respectfully traverse the rejection.

##### I. Claims 10-11

Claim 10-11 each recite, among other features, the local coordinate systems represent a stable die of the bending apparatus within the overall coordinate system.

Applicants respectfully submit Pourboghrat and JP ‘849, either alone or in combination, do not disclose or suggest such a feature.

With respect to Pourboghrat, Applicants respectfully note, the Office Action admits Pourboghrat lacks any teaching of being able to accommodate twisting action on an elongated product.

Moroeroer, as discussed above in section A.I. of this Response, the Office Action asserts Pourboghrat discloses a computer-implemented method of generating control data for a bending apparatus including steps of defining local coordinate systems within an overall coordinate system designed to specify a shape of an elongated product, wherein the local coordinate system represents a stable die of the bending apparatus within the overall coordinate system. The Office Action cites column 6 lines 44-56 of Pourboghrat in supporting the assertion.

Applicants have closely reviewed Pourboghrat and failed to locate any such disclosure or teaching.

Rather, Applicants respectfully note that Pourboghrat specifically teaches modeling the bending of the part by determining deformation of each discretized element as it is being bent by the rotary bending die and not the stationary portion. See column 6, lines 46-50 of Pourboghrat. The deformation subroutine disclosed by Pourboghrat calculates the deformation of the element 370 of the extrusion as it is being bent by the rotary die. See column 6, lines 52-54 of Pourboghrat. This procedure is repeated for each discrete element 370-377.

Moreover, Applicants respectfully submit the Office Action contradicts itself by later asserting in discussing the rejection of Claim 4 that Pourboghrat discloses, in column 6, lines 44-56, that control data is generated specifying positions for a movable die of the bending apparatus.

As such, Applicants respectfully submit that the passage of Pourboghrat cited by the Office Action does not disclose the local coordinate systems represent the stable die or stationary portion of the bending machine.

With respect to JP '849, Applicants respectfully submit the reference is applied by the Office Action for teaching bending and twisting an elongated product and that it would have been obvious to one of ordinary skill in the art to modify the computer program code of Pourboghrat with the teachings of JP '849 to accommodate treating bending and twisting an elongated product. However, Applicants note JP '849 does not appear to disclose or suggest the feature of a computer defining local coordinate systems on respective cross-sections of the elongated product in accordance with shape date, wherein the local coordinate systems representing a stable die of the bending apparatus within the overall coordinate system.

To establish *prima facie* obviousness, the applied art must teach or suggest each and every feature of a rejected claim. See M.P.E.P. §2143.03. As explained above, Pourboghrat and JP '849, either alone or in combination, fail to teach or suggest each and every feature of Claims 10-11. Therefore, Claims 10-11 are not rendered obvious in view of Pourboghrat and JP '849 and should be deemed allowable.

As such, Applicants respectfully request withdrawal of the rejection as it applies to Claims 10-11.

## II. Claim 12

Claim 12 recites, among other features, determining an angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis based on the shape data.

Applicants respectfully submit Pourboghrat and JP '849, either alone or in combination, do not disclose or suggest such a feature.

With respect to Pourboghrat, Applicants respectfully note, Applicants have carefully reviewed Pourboghrat and failed to uncover any disclosure or suggestion that the angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis is based on shape data. In fact, as noted above, Applicants respectfully submit a word search of Pouboghrat failed to uncover a single occurrence of the term "feed."

Accordingly, Applicants respectfully request any subsequent Office Action specifically identify the location within Pourboghrat where such a feature is disclosed or suggested.

With respect to JP '849, Applicants respectfully submit the reference is applied by the Office Action for teaching a bending and twisting device of long size work and that it would have been obvious to one of ordinary skill in the art to modify the computer program code of Pourboghrat with the teachings of JP '849 to accommodate treating bending and twisting an elongated product. However, Applicants note JP '849 does not appear to disclose or suggest the feature of the angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis is based on shape data.

To establish *prima facie* obviousness, the applied art must teach or suggest each and every feature of a rejected claim. See M.P.E.P. §2143.03. As explained above, Pourboghrat and JP '849, either alone or in combination, fail to teach or suggest each and every feature of Claim 12. Therefore, Claim 12 is not rendered obvious in view of Pourboghrat and JP '849 and should be deemed allowable.

As such, Applicants respectfully request withdrawal of the rejection as it applies to Claim 12.

### III. Claim 13

Claim 13 recites, among other features, a computer program code that causes a computer to determine the angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis based on the shape data.

Applicants respectfully submit Pourboghrat and JP '849, either alone or in combination, do not disclose or suggest such a feature.

With respect to Pourboghrat, Applicants have carefully reviewed Pourboghrat and failed to uncover any disclosure or suggestion of a computer program code which causes the computer to determine the angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis is based on shape data. In fact, as noted above, Applicants respectfully submit a word search of Pouboghrat failed to uncover a single occurrence of the term "feed."

Accordingly, Applicants respectfully request any subsequent Office Action specifically identify the location within Pourboghrat where such a feature is disclosed or suggested.

With respect to JP '849, Applicants respectfully submit the reference is applied by the Office Action for teaching a bending and twisting device of long size work and that it would have been obvious to one of ordinary skill in the art to modify the computer program code of Pourboghrat with the teachings of JP '849 to accommodate treating bending and twisting an elongated product. However, Applicants note JP '849 does not appear to disclose or suggest the feature of a computer program code causing a computer to determine the angle of torsion per unit length for a unit feed amount specified in a direction of the longitudinal axis is based on shape data.

To establish *prima facie* obviousness, the applied art must teach or suggest each and every feature of a rejected claim. See M.P.E.P. §2143.03. As explained above, Pourboghrat and JP '849, either alone or in combination, fail to teach or suggest each and every feature of Claim 13. Therefore, Claim 13 is not rendered obvious in view of Pourboghrat and JP '849 and should be deemed allowable.

As such, Applicants respectfully request withdrawal of the rejection as it applies to Claim 13.

#### IV. Claims 14-16

Applicants respectfully submit Pourboghrat and JP '849 do not teach or suggest each and every feature recited by Claims 14-16.

With respect to Pourboghrat, Applicants respectfully note the Office Action admits Pourboghrat lacks any teaching of being able to accommodate twisting action on an elongated product. Moreover, Applicants respectfully point out Claims 14-16 are directed to a computer-implemented method of generating a control data for a torsion apparatus. Despite the stark contrast between the teachings of Pourboghrat and the claimed invention, the Office Action asserts it would have been obvious to one skilled in the art to modify the computer program code of Pourboghrat with the teachings of JP '849, which is cited for disclosing the treatment of bending and twisting of an elongated product.

Applicants have reviewed JP '849 and respectfully disagree with the assertion put forth by the Office Action for the following reasons.

JP '849 merely discloses a bending/torsion apparatus that shaped an elongated material. JP '849 only refers to "moment" when bending and torsion are effected on the

elongated material. For example, Figures 2(b) and 2(c) illustrate the point A as the outlet of the first die 28. The point P is referred to as the position of the second die 39. The bending moment M can be derived from  $M=Wz$ , where W is the load applied to the point P in the y-axis, and z is the distance from the point P. The torsional torque T is applied to the first die 28. The bending moment T<sub>m</sub> acts on the material based on the torsional torque T.

JP '849 fails to teach or suggest determining a quantity for an elastic/plastic torsional deformation that is induced in the elongated workpiece, based on the torsional moment (Claim 14). Furthermore, JP '849 fails to teach or suggest determining a quantity for a torsional variation induced in an elongated workpiece in response to a sectional deformation of the elongated workpiece, wherein the section deformation is induced at an edge of a through hole on at least one of the first and second dies (Claim 15). Moreover, JP '849 fails to teach or suggest determining the quantity of a clearance defined between the elongated workpiece and at least one of first and second dies (Claim 16). In fact, Applicants respectfully submit JP '849 lacks any teaching of calculating the position of the movable die relative to the stable die.

To establish *prima facie* obviousness, the applied art must teach or suggest each and every feature of a rejected claim. See M.P.E.P. §2143.03. As explained above, Pourboghrat and JP '849, either alone or in combination, fail to teach or suggest each and every feature of Claims 14-16. Therefore, Claims 14-16 are not rendered obvious in view of Pourboghrat and JP '849 and should be deemed allowable.

As such, Applicants respectfully request withdrawal of the rejection as it applies to Claims 14-16.

## Conclusion

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of Claims 1-17, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 023855-00000**.

Respectfully submitted,



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